XIV. *Sexual dimorphism in* Buprestis sanguinea, *Fabr., a species occurring in Spain, and new to the European list.* By George Charles Champion, F.Z.S.

[Read October 2nd, 1901.]

Plate XIII.

During a recent visit to Aragon, July 27th—Aug. 8th, Dr. Chapman and I made various excursions to the low hills which extend along the base of the northern slope of the Sierra de Albarracin, between the towns of Albarracin and Gea, chiefly in search of the numerous interesting Satyrid-butterflies that abound there. In such localities there is a scattered growth of the cypress-like "savin" (*Juniperus sabina*), which here attains the dimension of a good-sized tree, and amongst these are many shrubs. On one of the latter, *Ephedra nebrodensis*,* of the family Gnetaceæ (joint-firs), old plants of which have a stem nearly two inches in diameter, two very dissimilarly-coloured conspicuous *Buprestids* were to be seen, and as specimens of each of these occurred over and over again in close proximity on the same kind of plant, we took a good deal of interest in them, plant and insects alike being new to us. We very soon ascertained that all the examples of one form of the *Buprestid* were male and all the other female, the sexes being in about equal numbers, and there cannot, therefore, be the slightest doubt that they belong to the same species, though none were actually observed *in copula*. In the early morning the beetles were quite sluggish and easily captured with the fingers, being at rest, usually head downwards, on a bit of the woody stem, where the green twigs were thickly placed; but during the heat of the day they were more active, and a few were then taken on the wing, mostly males. The present species has not, so far as I am aware, been recorded from the continent of Europe, though I have a specimen of the male from the vicinity of Gibraltar, sent me years ago by Mr. J. J. Walker. No such sexual difference has been noticed or

* I am indebted to Mr. W. B. Hemsley, F.R.S., of Kew Gardens, for the determination of this plant. The specific name appears to have been taken from that of a district in Sicily.

suspected, I believe, amongst the *Buprestidæ*, nevertheless the observations of Dr. Chapman and myself are sufficient to prove that in one species of the family, at least, such a peculiarity is to be found. The females agree very nearly with the brief diagnosis of *Buprestis sanguinea*, Fabr., from Mogador, and with the description and figure of *B. levaillanti*, Lucas, from Mostaganem, Algeria (these insects being treated as synonymous in the Catalogues of Gemminger and Harold and E. Saunders *), and the males with the description of *B. margaripicta*, Mars., from Algeria, the male only of the latter being known. There can be very little doubt that the Albarracin insect is synonymous with *B. sanguinea*, Fabr. (a species not identified by Marseul and other modern writers), as in addition to the above-mentioned specimen from Gibraltar, there is a doubtful record of the female (under *B. levaillanti*) from Tangier.† As regards the Algerian *B. levaillanti* and *B. margaripicta*, M. René Oberthür has been kind enough to send me a coloured drawing of each of them, and also to compare a male and female of the Spanish insect with his single specimens of each of these so-called species, that of the male (*B. margaripicta*) being the only one recorded. The differences noted by him (apart from the somewhat dissimilar elytral markings of the male) chiefly consist in the relative width of the front of the head, the armature of the apices of the elytra, and the extent of the emargination of the apex of the fifth ventral segment in the male.

From analogy, it is almost certain that *B. margaripicta* and *B. levaillanti* are but sexes of one species, and in this M. Oberthür is inclined to agree with me; and it is very probable that the above-mentioned differences between the Spanish and the Algerian forms will prove to be inconstant when a longer series of the latter is available for comparison, and are no greater than might be expected between specimens from distant localities.

The following description is taken from the series of upwards of twenty of each sex before me:—

♂. Nigro-violaceous, the lateral margins of the prothorax broadly, and the anterior margin narrowly (except in the middle), and four

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* Lucas (Bull. Soc. Ent. Fr., 1884, pp. xli, xlii) disputed the identity of his *B. levaillanti* with *B. sanguinea*, Fabr., but without giving substantial reasons for maintaining them as distinct.

† Marseul, Monogr. Buprest., p. 187 (1865).

interrupted transverse fasciæ on the elytra (the first two sometimes connected laterally, and in one specimen on the disc also, and the fourth often reduced to a small spot on the disc of each elytron), flavous or pale stramineous (whitish in life), the base of the prothorax between the flavous lateral portions usually bordered with rufous or with two or three rufous spots or streaks; beneath yellow or pale yellow, variegated with nigro-violaceous, a median stripe on the venter and the ventral sutures being conspicuously marked with this colour; legs and antennæ nigro-violaceous. Eyes large and rather convex, the head appearing very broad. Tarsi moderately dilated. Anterior tibiæ simple, without recurved hook before the apex. Fifth ventral segment abruptly truncate and slightly emarginate at the apex.

Length $11\frac{1}{2}$–$15\frac{1}{2}$, breadth $4\frac{1}{8}$-6 millim. [*margaripicta*, Mars.]

♀. Bright rufous, with the following parts nigro-violaceous—the head, except for two transverse yellow marks on the front, four spots in a transverse row on the anterior part of the prothorax (all four, or the two on the middle of the disc, sometimes connected, and those on the disc sometimes wholly absent), the extreme basal margin of the latter, the scutellum, the sutural and basal margins of the elytra very narrowly, as well as the apex, a spot on the humeral callus, two others in a transverse line below it, a transverse post-median fascia (sometimes reduced to two spots on each elytron, and the inner one of these not always present), and an interrupted fascia before the apex (this latter often reduced to two spots, or wholly absent); beneath coloured as in the males; legs and antennæ nigro-violaceous, the femora sometimes with a yellow spot in the middle beneath. Eyes smaller and less convex, the head thus appearing much narrower than in the male. Tarsi feebly dilated. Anterior tibiæ as in the male. Fifth ventral segment feebly truncate at the apex.

Length $10\frac{3}{4}$–$17\frac{3}{4}$, breadth 4–7 millim. [*sanguinea*, Fabr. = *levaillanti*, Luc.]

Head closely, rugosely punctured; prothorax convex, coarsely, closely punctate, deeply bisinuate at the base and apex, rounded at the sides, with a short median channel or fovea in front of the scutellum, the latter very small; elytra deeply striate, the striæ finely punctate, the interstices convex and sparsely punctate, the apex of each elytron obliquely truncate, with the sutural angle acutely produced and the outer one more or less dentiform. Head, legs, and under surface clothed with short, scattered, pallid hairs. Median sulcus on the first ventral segment deep, extending nearly or quite to the posterior margin of the latter, in some males carried on to the second segment.

There is in both sexes a considerable amount of variation in the

markings of the upper surface (these not always being symmetrical on the elytra), according to the predominance of the light or dark colour, some of the spots on the prothorax or elytra being often absent, especially in the female. The median sulcus on the first central segment also varies a little in length, and the tooth at the outer apical angle of the elytra is sometimes obsolete. The coloration of the under surface is similar in both sexes.

The Algerian insect, M. Oberthür informs me, has the interocular portion of the head relatively narrower; the longitudinal impression upon the first ventral segment deep, sharply defined, and extending to the posterior margin of the latter; the fifth ventral segment of the male narrowly and somewhat deeply emarginate in the middle; the tooth at the outer apical angle of the elytra (in the male) obsolete; and the anterior margin of the prothorax less sinuate. In the coloured drawing before me of the type of the male (*margaripicta*) the second elytral fascia is represented by a large subtriangular patch on each elytron, this being more extended in the longitudinal direction than in any of the Spanish specimens obtained at Albarracin. The single male from Gibraltar has a narrow streak extending down the fifth elytral interstice from the first yellow fascia, and in one of the examples of the same sex from Albarracin this yellow streak runs still further down and joins the second fascia, so as to completely enclose a common transverse nigro-violaceous patch.

In the simple anterior tibiæ in the male, the present species, as noted by Marseul (under *B. margaripicta*), differs from all the other European forms, three of which occurred in the pine-forests of the same district in Spain, approaching the genus *Eurythyrea* in this respect, in which, however, the scutellum is much larger, etc. The sexual dimorphism and the similar form of the anterior tibiæ in the two sexes tend to show that the insect will probably have to be removed from the genus *Buprestis*.

It may be observed also that the habits of *B. sanguinea* are different from those of its congeners, these latter attacking pine-logs, upon which the beetles may frequently be seen during the heat of the day.

B. hilaris, Klug (= *variegata*, Klug), from Egypt, said to be found on mint, is perhaps congeneric with *B. sanguinea*. *B. amori*, Graells, from Spain, is sunk by Marseul and others as synonymous with the Algerian

B. douei, Luc.; it cannot, therefore, as is evident by the published figures of these insects, be very nearly related to *B. sanguinea*.

The locality, Albarracin, in the province of Teruel, is remarkable for possessing various Lepidoptera not found elsewhere in Europe, some of which are African, as *Satyrus prieuri*, *Albarracina korbi* (the larva of which also lives on the *Ephedra*), etc. The plant, *Ephedra nebrodensis*, has much the appearance of a shrubby *Equisetum*, the young shoots being somewhat similarly jointed, and such leaves as we could find were merely chaffy scales at the joints. In their second year the shoots become woody, and for a shrub comparable in size to *Calluna*, its stems were remarkably thick and strong, reaching high up in the plant, making it very stiff and broom-like. We saw the *Ephedra*, no doubt, after its season of growth for the year, and much of it looked faded and turning brown. The stunted unsymmetrical aspect was probably due to injury by grazing animals. The stems of the plants were covered with a rusty-red lichen, very similar in colour to the upper surface of the female beetle, and this may afford the insect a certain amount of protection.

The extraordinary sexual dimorphism in the present species tends to show that the same peculiarity is likely to occur in other *Buprestids*, especially, no doubt, amongst the Australian *Stigmoderæ*, numbers of which have been named without any notice being taken of the sex of the individuals described.

Assuming that *B. sanguinea*, Fabr., *B. levaillanti*, Lucas, and *B. margaripicta* (Mars.) are synonymous, the citations are as follows:

♀. *sanguinea*, Fabr., Ent. Syst., Suppl., p. 135 (1798). Type, Mogador (Schousboe in Mus. Lund. = Mus. Copenhagen) (*cf.* Erichson).

♀. *levaillanti*, Lucas, in Rev. Zool., 1844, p. 50; Expl. Algérie, ii, p. 149, t. 15, f. 85; Marseul, in L'Abeille, ii, pp. 169, 186. Type, Mostaganem, Algeria.

♂. *margaripicta*, Marseul, in L'Abeille, ii, pp. 169, 186 (1865) (*Ancylochira*). Type, Algeria.

In addition to the specimens described by these authors (two being mentioned by Lucas), three others have been captured, but not recorded.* These are from Oran,

* M. Bedel has been kind enough to send me these particulars.

Western Algeria: one female on the Plaine des Andalouses, beyond Cape Falcon (*Saint Pierre*, coll. *V. Mayet*); two males on the Champ des Manœuvres (*Moisson*). As noted on p. 380, the record of *B. levaillanti*, from Tangier, by Marseul, is doubtful.

Explanation of Plate XIII.

Figs. 1—5. *Buprestis sanguinea*, Fabr. ♂.
6. „ „ „ , ♂, underside.
6*a*. „ „ „ , ♂, anterior leg.
7—12. „ „ „ , ♀.
13. A piece of the food-plant, *Ephedra nebrodensis* (order *Gnetaceæ*), the woody stem of which is probably attacked by the beetle: ⅔ nat. size.

The specimens figured, including the plant, are from Albarracin, with the exception of fig. 5, which is taken from a ♂ found near Gibraltar.